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Jinny Nguyen

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In Re Application of:	Date: August 23, 2005
Jeff W. JOSTEN et al.	Confirmation No.: 5056
Serial No: 09/705,967	Group Art Unit: 2167
Filed: November 3, 2000	Examiner: Pannala, Sathyanaraya R.

For: METHOD AND SYSTEM FOR RECOVERING DATA IN A PLURALITY OF SYSTEMS

APPEAL BRIEF

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I. REAL PARTY IN INTEREST

Appellant respectfully submits that International Business Machines Corporation is the real party in interest.

II. RELATED APPEALS AND INTERFERENCES

Appellant states that no such proceeding exists.

III. STATUS OF CLAIMS

Claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, and 23-28 are pending and stand rejected. Accordingly, claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, and 23-28 are on appeal and all applied rejections concerning those claims are herein being appealed.

IV. STATUS OF AMENDMENT

In a response to a Final Office Action filed on January 11, 2005, Appellant amended claim 28 to correct a typographical error, so that amended claim 28 depends upon independent claim 25 instead of claim 24. No other claims were amended, added, or canceled. In an Advisory Action dated February 28, 2005, the Examiner states that this response will be entered for purposes of appeal.

V. SUMMARY OF CLAIMED SUBJECT MATTER

The present invention provides a method, system, and computer readable medium with program instructions for recovering retained locks in a shared system environment having a plurality of computer systems sharing processor resources. In accordance with the present invention, a new mode of restarting a failed database management system (DBMS) is introduced. This new mode preferably specifies that only minimal resources are utilized to perform the restart/recovery process of a failed DBMS.

Independent claims 23 and 25 recite a method and computer readable medium with programs instructions, comprising: (a) determining that at least one computer system of the plurality of computer systems has failed; (b) retaining a plurality of locks held by the failed system in response to the failure; and (c) performing a restart operation on the failed system to free the retained locks using only shared processor resources determined to be necessary for performing the restart operation.

Figure 1 is an example of a system 100 in which the present invention could be implemented. The system 100 comprises a plurality of operating systems 102, 104, 106 wherein each of the plurality of operating systems includes a DBMS 103, 105, 107 wherein each of the DMBSs are logically grouped together and operate in tandem with one another. (Specification p. 4, lines 2-7)

Figure 2 is a flowchart of the method in accordance with the present invention. In a system comprising a cluster of operating systems wherein each operating includes a DBMS, the method begins with the abnormal termination (failure) of one of the DMBSs, via step 200. Next,

the data locks of the failed DBMS are retained, via step 202. Then, the failed DBMS is restarted utilizing minimal system resources, via step 204.

Independent claim 24 provides for a system, comprising: means for determining that at least one computer system of the plurality of computer systems has failed; means for retaining a plurality of locks held by the failed system in response to the failure; and means for performing a restart operation on the failed system to free the retained locks using only shared processor resources determined to be necessary for performing the restart operation. Each recited means is described in the combination of Figures 1 and 2, set forth above.

In accordance with the present invention, minimal resources are a predefined plurality of resources that are necessary only for the performance of a restart/recovery process for the failed database management system (DBMS). Since the recovery of the data being protected by the retained data locks is the only task that is being performed, any resource that does not facilitate the accomplishment of this task is not needed. (Specification p. 4, lines 15-19)

For example, a resource that is utilized to enable the failed DBMS to accept new work is not necessary for the performance of the restart/recovery process and is not necessary for the performance of the restart/recovery process and is therefore not a minimal resource. (Specification p. 4, lines 18-21)

By utilizing minimal resources, the restart/recovery process can be performed quickly and once the data being protected by the retained data locks has been recovered and the data is brought back to consistency, the failed DBMS immediately shuts down in a normal fashion without accepting any new work. (Specification p. 4, lines 8-14)

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Appellant respectfully seeks review of the following rejections:

1. Claims 26-28 are rejected under 35 USC 112, second paragraph, as failing to set forth the subject matter which applicants regard as their invention.

2. Claims 2-3, 5-6, 8-9, 11-12, 14-15, 17-18, and 23-25 are rejected under 35 USC 103(a) as being unpatentable over Haderle et al. (6,185,699) and in view of Watts et al. (6,275,832).

VII. ARGUMENTS

A. Summary of the Applied Rejections

In the Final Office Action, the Examiner rejects claims 26-28 under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. The Examiner states:

> Evidence that claims 26-28 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the reply filed on 5/28/2003 [sic]. In that paper, applicant has stated as (New claims 26-28 and specification p. 4, lines 21 – p. 5, line 3), and this statement indicates that the invention is different from what is defined in the claim(s) because the specification do not support, rather it is adopted form [sic] the prior art.

The Examiner further rejects claims 2-3, 5-6, 8-9, 11-12, 14-15, 17-18, and 23-25 under 35 U.S.C. 103(a) as being unpatentable over Haderle et al. (6,185,699) and in view of Watts et al. (6,275,832). The Examiner states:

> As per independent claims 23-25, Haderle rendered by the following:
> "determining that at least one computer system of the plurality of computer systems has failed" at Fig. 1, col. 5, lines 47-49;
> "performing a restart operation on the failed system to free the retained locks using only shared processor resources determined to be necessary for performing the restart operation" at Fig. 1, col. 5, lines 53-57.
> Haderle does not teach specifically retaining locks at the time of restarting the system after failure. However Watts teaches the following:
> "retaining a plurality of locks held by the failed system in response to the failure" at Fig. 3, col. 7, line 65 to col. 8, line 14.
>
> Thus, it would have been obvious to one ordinarily skilled in the art at the time of the invention to incorporate computer-programming instructions to convert nonstandard database record to a standard database record. Haderle and Watts are combined as they teach recovery techniques from database failure and to retain of locks during database restarting time. In order to undo a transaction backout from system failure retained lock information is useful...

In the section "Response to Arguments", the Examiner states:

> ...In response to the Applicant's argument, the prior art by Haderle and Watts still teaches all claims its limitations. For information, Haderle teaches restarting the system automatically in response to the failure, or waits for a user command to restart, the recovery mechanism makes an analysis pass through the log form [sic] the last check-point forward (at Fig. 1, col. 5, lines 54-60). Whereas Watts teaches retaining locks to recover the system from failure (at Fig. 3, col. 7, line 65 to col. 8, line 14). The new claims 26-28 are not supported by the specification and claiming the part to over ride the prior art. In the abstract of Haderle et al. (US Patent 6, 185,699) stated as "An amount of restart recovery processing may be postponed until after the DBMS has begun accepting new work requests." It clearly means that the restart recovery processing postponed whenever necessary but not always. So that is an additional feature in comparison to the current invention.

B. The Cited Prior Art

Haderle discloses a method and apparatus to provide DBMS restart recovery that allows transactions to access data that does not have restart recovery work pending. Haderle states:

> Regardless of the embodiment, the invention allows full recovery to be completed concurrent to the processing of new transactions requiring access to the database. An amount of restart recovery processing may be postponed until after the DBMS has begun accepting new work requests." (Abstract)

Watts discloses a technique for undoing a transaction that changes data in a database. the database contains at least one data unit. The database is stored in a data storage device connected to a computer. A lock, transaction identifier, transaction operation indicator, and data unit, are associated with the transaction. Watts undoes the transaction using the associated lock, transaction identifier, transaction operation indicator, and data unit. (Abstract)

C. Claims 26, 27, and 28 clearly set forth the subject matter which appellant regard as the invention.

Appellant respectfully submits claims 26-28 are specifically supported at specification p. 4,

lines 21 through p. 5, line 3. Claims 26, 27, and 28 depend upon independent claims 23, 24, and 25, respectively. Appellant submits that claims 26-28 are patentable when read in combination with their respectively independent claims. In the reply filed on May 24, 2004, Appellant argues, "Resources that do not facilitate the recovery of the data are not used during the restart." Applicant further sets forth an example of such resources in the statement, "Such resources include allowing the failed computer system to accept new work." Immediately following, Appellant cites support for this example in the specification at p. 4, lines 21 – p. 5, line 3, and indicates that this example is claimed in the newly added claims 26-28. The manner in which the Examiner's applies this support citation to Appellant's arguments is erroneous and is contrary to its plain meaning. Appellant therefore requests that the Examiner's withdraw this rejection.

D. Independent claims 23, 24, and 25 are allowable over Haderle in view of Watts.

Appellant respectfully submits that Haderle in view of Watts fails to teach or suggest each and every element of independent claims 23, 24, and 25. Independent claims 23-25 claim that a restart operation on the failed system is performed to free the retained locks using *only* shared processor resources determined to be necessary for performing the restart operation. Thus, any processor resources not determined to be necessary for performing the restart operation is precluded from use. The simple fact that Haderle and Watts teaches that restart recovery processing is not always postponed, as admitted by the Examiner, means that new work requests can and are sometimes accepted. This is contrary to the ordinary and plain meaning of the limitation recited in claims 23-25 that only shared processor resources determined to be necessary for performing the restart operation is used. Thus, Appellant maintains that Haderle in view of Watts does not teach or suggest restarting the at least one computer system using only

shared processor resources determined to be necessary for performing the restart operation, in combination with the other recited element in independent claims 23, 24, and 25.

In view of the foregoing, it is submitted that claims 23, 24, and 25 are allowable over Haderle in view of Watts. Claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, and 26-28 depend from claims23, 24, and 25, respectively, and are allowable because they are dependent upon allowable independent claims.

E. Claims 26, 27, and 28 are allowable over Haderle in view of Watts.

Appellant respectfully submits that Haderle in view of Watts fails to teach or suggest each and every element of claims 26, 27, and 28. Haderle in view of Watts does not teach or suggest that the necessary shared resources do not include enabling the failed system to accept new work. In fact, Haderle teaches the contrary, stating:

> Regardless of the embodiment, the invention allows full recovery to be completed concurrent to the processing of new transactions requiring access to the database. An amount of restart recovery processing may be postponed until after the DBMS has begun accepting new work requests." (Abstract)

In view of the foregoing, it is submitted that claims 26, 27, and 28 are allowable over Haderle in view of Watts.

F. Summary of Arguments

For the reasons set forth above, Appellant respectfully submits that the claims 2, 3, 5, 6, 8, 9, 11, 12, 14, 15, 17, 18, and 23-28 are allowable over the cited references. Appellant respectfully requests that the final rejection of these claims be reversed.

Note: For convenience of detachment without disturbing the integrity of the

remainder of pages of this Appeal Brief, Appellants' APPENDICES A-C are attached on separate sheets following the signatory portion of this Appeal Brief.

Please charge any fee that may be necessary for the continued pendency of this application to Deposit Account No. 09-0460 (IBM Corporation).

Respectfully submitted,

SAWYER LAW GROUP LLP

August 23, 2005
Date

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APPENDIX A

CLAIMS

1. (canceled)

2. (previously presented) The method of claim 23 wherein step b) further comprises allowing another system of the plurality of systems to retain the plurality of locks of the at least one system.

3. (previously presented) The method of claim 23 wherein step c) further comprises:

c1) allowing another system of the plurality of systems to restart the at least one system;

c2) recovering data being protected by the retained locks of the at least one system utilizing only the shared processor resources of the another system determined to be necessary for performing the restart operation; and

c3) allowing the at least one system to terminate in a normal fashion.

4. (canceled)

5. (previously presented) The method of claim 3 wherein step c1) further comprises:

c1i) providing a request to restart the at least one system;

c1ii) allowing the another system to detect the request; and

c1iii) allowing the another system to restart the at least one system based on the request,

utilizing only the shared processor resources determined to be necessary for performing the restart operation.

6. (previously presented) The method of claim 23 wherein the plurality of locks comprise a plurality of data locks.

7. (canceled)

8. (previously presented) The system of claim 24 wherein the means for retaining the plurality of locks further comprises means for allowing another computer system to retain the plurality of locks held by the at least one computer system.

9. (previously presented) The system of claim 8 wherein the means for restarting the at least one computer system further comprises:

means for allowing the another computer system to restart the at least one computer system;

means for recovering the data being protected by the retained locks held by the at least one computer system using only the shared processor resources determined to be necessary for recovering the data; and

means for allowing the at least one computer system to terminate in a normal fashion after recovering the data.

10. (canceled)

11. (previously presented) The system of claim 9 wherein means for allowing the another computer system to restart the at least one computer system further comprises:

means for providing a request to restart the at least one computer system;

means for allowing the another computer system to detect the request; and

means for allowing the another computer system to restart the at least one computer system based on the request using only the shared processor resources that are determined to be necessary for recovering the data.

12. (previously presented) The system of claim 24 wherein the plurality of locks comprise a plurality of data locks.

13. (canceled)

14. (previously presented) The computer readable medium of claim 25 wherein instruction b) further comprises allowing another system of the plurality of systems to retain the plurality of locks held by the at least one system.

15. (previously presented) The computer readable medium of claim 25 wherein instruction c) further comprises:

c1) allowing the another system of the plurality of systems to restart the at least one system;

c2) recovering the data being protected by the retained locks held by the at least one system using only the shared processor resources that are determined to be necessary for recovering the data; and

c3) allowing the another system to terminate the at least one system in a normal fashion after recovering the data.

16. (canceled)

17. (previously presented) The computer readable medium of claim 15 wherein instruction c1) further comprises:

c1i) providing a request to restart the at least one system;

c1ii) allowing the another system to detect the request; and

c1iii) allowing the another system to restart the at least one system based on the request using only the shared processor resources determined to be necessary for recovery the data.

18. (previously presented) The computer readable medium of claim 25 wherein the plurality of locks comprise a plurality of data locks.

19. – 22. (canceled)

23. (previously presented) A method for recovering retained locks in a shared system environment having a plurality of computer systems sharing processor resources, comprising:

(a) determining that at least one computer system of the plurality of computer systems has failed;

(b) retaining a plurality of locks held by the failed system in response to the failure; and

(c) performing a restart operation on the failed system to free the retained locks using only shared processor resources determined to be necessary for performing the restart operation.

24. (previously presented) A system for recovering retained locks in a shared system environment having a plurality of computer systems sharing processor resources, comprising:

means for determining that at least one computer system of the plurality of computer systems has failed;

means for retaining a plurality of locks held by the failed system in response to the failure; and

means for performing a restart operation on the failed system to free the retained locks using only shared processor resources determined to be necessary for performing the restart operation.

25. (previously presented) A computer readable medium with program instructions for recovering retained locks in a shared system environment having a plurality of computer systems sharing processor resources, comprising instructions for:

(a) determining that at least one computer system of the plurality of computer systems has failed;

(b) retaining a plurality of locks held by the failed system in response to the failure; and

(c) performing a restart operation on the failed system to free the retained locks using only shared processor resources determined to be necessary for performing the restart operation.

26. (previously presented) The method of claim 23, wherein the necessary shared processor resources does not include enabling the failed system to accept new work.

27. (previously presented) The system of claim 24, wherein the necessary shared processor resources does not include enabling the failed system to accept new work.

28. (previously amended) The medium of claim 25, wherein the necessary shared processor resources does not include enabling the failed system to accept new work.

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APPENDIX B

EVIDENCE

(NONE)

APPENDIX C

RELATED PROCEEDINGS

(NONE)

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TRANSMITTAL FORM

Attorney Docket No. **STL000039US1/1715P**

In re Application: **Jeff W. JOSTEN et al.** Confirmation No: **5056**

Serial No: **09/705,967** Group Art Unit: **2167**

Filed: **November 3, 2000** Examiner: **Pannala, Sathyanaraya R.**

For: **Method and System for Recovering Data In A Plurality of Systems**

ENCLOSURES *(check all that apply)*					
☐	Amendment/Reply	☐	Assignment and Recordation Cover Sheet	☐	After Allowance Communication to Group
	☐ After Final	☐	Part B-Issue Fee Transmittal	☐	Notice of Appeal
☐	Information disclosure statement	☐	Letter to Draftsman	■	Amended Appeal Brief
	☐ Form 1449	☐	Drawings	☐	Status Letter
	☐ (X) Copies of References	☐	Petition	■	Postcard
☐	Extension of Time Request *	☐	Fee Address Indication Form	☐	Other Enclosure(s) (*please identify below):*
☐	Express Abandonment	☐	Terminal Disclaimer		
☐	Certified Copy of Priority Doc	☐	Power of Attorney and Revocation of Prior Powers		
■	Response to Notification of Non-Compliant Appeal Brief	☐	Change of Correspondence Address		
☐	Response to Missing Parts	*Extension of Term: Pursuant to 37 CFR 1.136, Applicant petitions the Commissioner to extend the time for response for xxxxxx month(s), from to .			
	☐ Executed Declaration by Inventor(s)				

CLAIMS

FOR	Claims Remaining After Amendment	Highest # of Claims Previously Paid For	Extra Claims	RATE	FEE
Total Claims	18	22	0	$ 50.00	$ 0.00
Independent Claims	3	4	0	$200.00	$ 0.00
				Total Fees	$ 0.00

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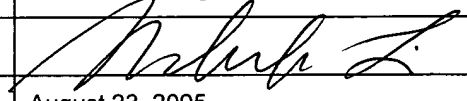
Signature	
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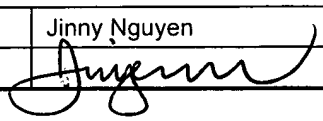
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